# 2020 - 2021 Major Map
## Applied Mathematics for Life and Social Sciences, BS

**School/College:** The College of Liberal Arts and Sciences  
**Location:** Tempe campus

### Term 1 - 0 - 15 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
</table>
| AML 100: Introduction to Applied Mathematics for the Life and Social Sciences (MA) | 3     | C             | - An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses  
| BIO 181: General Biology I (SQ)                                       | 4     | C             | - Mathematics Placement Assessment score determines placement in mathematics course and eligibility for AML 100  
| ENG 101 or ENG 102: First-Year Composition OR                         | 3     | C             | - ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students.  
| ENG 105: Advanced First-Year Composition OR                           |       |               | - Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.  
| LIA 101: Student Success in The College of Liberal Arts and Sciences   | 1     |               | - Select your career interest area and play me3@ASU.  
| MAT 270: Calculus with Analytic Geometry I (MA)                       | 4     | C             | - Create a first draft resume.  

**Term hours subtotal:** 15

### Term 2 - 15 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
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</tr>
</thead>
</table>
| CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming (CS) | 3     | C             | - Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.  
| BIO 182: General Biology II (SG)                                      | 4     | C             | - Use the SB course in this term as a prerequisite for upper-division work in the Social Science track. Recommended courses are found in track list below.  
| ENG 101 or ENG 102: First-Year Composition OR                         | 3     | C             | - Build your professional connections -- join the ASU Mentor Network.  
| ENG 105: Advanced First-Year Composition OR                           |       |               | - Join a student club or professional organization.  
| MAT 271: Calculus with Analytic Geometry II (MA)                      | 4     | C             | - Complete ENG 101 OR ENG 105 OR ENG 107 course(s).  
| Social-Behavioral Sciences (SB)                                       | 3     |               | - Minimum 2.00 GPA in STP and MAT.  

**Term hours subtotal:** 17

### Term 3 - 32 - 48 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
</table>
| MAT 272: Calculus with Analytic Geometry III (MA)                     | 4     | C             | - Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.  
| Science and Society Elective                                          | 3     | C             | - Secure a part-time job or volunteer experience.  
| Global Awareness (G)                                                  | 3     |               | - Develop your skills.  
| Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) | 3     |               |  
| Literacy and Critical Inquiry (L)                                     | 3     |               |  

**Complete First-Year Composition requirement.**  
**Complete Mathematics (MA) requirement.**  
**Minimum 2.00 GPA in STP and MAT.**

**Term hours subtotal:** 16
### Term 4  
**48 - 63 Credit Hours**  
**Critical course signified by ☑**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ AML 253: Introduction to Mathematical Tools and Modeling for the Life and Social Sciences</td>
<td>3</td>
<td>C</td>
<td>• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.</td>
</tr>
<tr>
<td>MAT 274: Elementary Differential Equations (MA) OR MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
<td>C</td>
<td>• Use the SB course in this term to complete a prerequisite for upper-division work in the Social Science track. Recommended courses are found in the track list below.</td>
</tr>
<tr>
<td>STP 420: Introductory Applied Statistics (CS)</td>
<td>3</td>
<td>C</td>
<td>• Explore an internship.</td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum 2.00 GPA in STP and MAT.

Term hours subtotal: **15**

### Term 5  
**63 - 78 Credit Hours**  
**Necessary course signified by ★**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>★ Upper Division Life Science course</td>
<td>3</td>
<td>C</td>
<td>• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.</td>
</tr>
<tr>
<td>★ Upper Division Social Science course</td>
<td>3</td>
<td>C</td>
<td>• Develop your professional online presence.</td>
</tr>
<tr>
<td>STP 421: Probability</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum 2.00 GPA in STP and MAT.

Term hours subtotal: **15**

### Term 6  
**78 - 93 Credit Hours**  
**Necessary course signified by ★**

<table>
<thead>
<tr>
<th>Course</th>
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<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>★ MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra</td>
<td>3</td>
<td>C</td>
<td>• Research employment opportunities.</td>
</tr>
<tr>
<td>★ Upper Division Applied Mathematics course</td>
<td>3</td>
<td>C</td>
<td>• Complete an in person or virtual practice interview.</td>
</tr>
<tr>
<td>★ Upper Division Life Science course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective OR ASB 484: Internship</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum 2.00 GPA in STP and MAT.

Term hours subtotal: **15**

### Term 7  
**93 - 108 Credit Hours**  
**Necessary course signified by ★**

<table>
<thead>
<tr>
<th>Course</th>
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<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>★ Upper Division Applied Mathematics course</td>
<td>3</td>
<td>C</td>
<td>• Gather professional references.</td>
</tr>
<tr>
<td>★ Upper Division Social Science course</td>
<td>3</td>
<td>C</td>
<td>• Apply for full-time career opportunities.</td>
</tr>
<tr>
<td>Upper Division Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum 2.00 GPA in STP and MAT.

Term hours subtotal: **15**

### Term 8  
**108 - 120 Credit Hours**  
**Necessary course signified by ★**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
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</tr>
</thead>
<tbody>
<tr>
<td>★ AML 406: Directed Reading and Research in Applied Mathematics for the Life and Social Sciences</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>
### Upper Division Elective

**Recommended SB courses**
- ASB 102: Introduction to Cultural Anthropology (SB & G)
- CDE 232: Human Development (SB)
- JUS 105: Introduction to Justice Studies (SB)
- POS 110: American Government and Politics (SB)
- PSY 101: Introduction to Psychology (SB)
- SOC 101: Introductory Sociology (SB)

**Upper Division Life Science**
- AML 394: From Cells to Societies or ASB 394: From Cells to Societies or SOS 394: From Cells to Societies
- AML 394: Modeling Simulation Neglected Tropical Diseases
- ASB 494: Applied Epidemiology
- ASM 342: Evolution of Human Behavior or BIO 327: Evolution of Human Behavior
- BIO 302: Cancer—Mother of All Diseases (L)
- BIO 321: Introductory Ecology Laboratory
- BIO 415: Biometry (CS)
- BMI 465: Introduction to Comparative Genomics
- HCD 300: Biostatistics (CS) or PBH 300: Biostatistics (CS)
- SOS 424: Dynamic Modeling in Social and Ecological Systems

**Upper Division Social Science**
- ASB 316: Money and Culture (L or SB)
- ASB 394: Statistics for Social Scientists
- ASM 345: Disease and Human Evolution
- ASM 465: Quantification and Analysis for Anthropologists (CS)
- ASM 494: Bayesian Statistics in Theory and Practice
- GCU 351: Population Geography (SB & G)
- GIS 461: Fundamentals of Spatial Optimization or PUP 481: Fundamentals of Spatial Optimization
- JUS 301: Research in Justice Studies (SB)
- JUS 302: Statistical Analysis for Justice Studies (CS)
- POS 301: Empirical Political Inquiry (SB) or SGS 305: Empirical Political Inquiry (SB)
- POS 401: Political Statistics (CS) or SGS 401: Political Statistics (CS)
- POS 485: Political Economy (SB)
- SOC 331: Environmental Sociology (SB & G)
- SOC 390: Social Statistics I (CS)
- SOC 391: Research Methods (L or SB)
- SOC 448: Epidemics and Society (SB & G)

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- All students pursuing a BS or BSP degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at [https://thecollege.asu.edu/resources/science-society](https://thecollege.asu.edu/resources/science-society). At least one of the two courses must be upper-division and students must earn a C or better in the courses. Both Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields, and ASU General Studies requirements.

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**Upper Division Applied Mathematics**
- AML 441: Mathematical Concepts and Tools in Sustainability or SOS 441: Mathematical Concepts and Tools in Sustainability
- AML 494: Modeling with Game Theory
MAT 300: Mathematical Structures (L)

MAT 343: Applied Linear Algebra

MAT 355: Introduction to Computational Molecular Biology (CS) or BIO 355: Introduction to Computational Molecular Biology (CS)

MAT 371: Advanced Calculus I

MAT 394: Forensic DNA Analysis

MAT 421: Applied Computational Methods (CS)

MAT 451: Mathematical Modeling (CS)

MAT 494: Big Data and Mathematical Modelling

MAT 494: Data Analysis in Neuroscience

Notes:

- Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

General University Requirements Legend

General Studies Core Requirements:
- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:
- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed on the major map are current for the 2020 - 2021 academic year.